

JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Backlog) December 2025

BCA , Semester III

Roll No.....

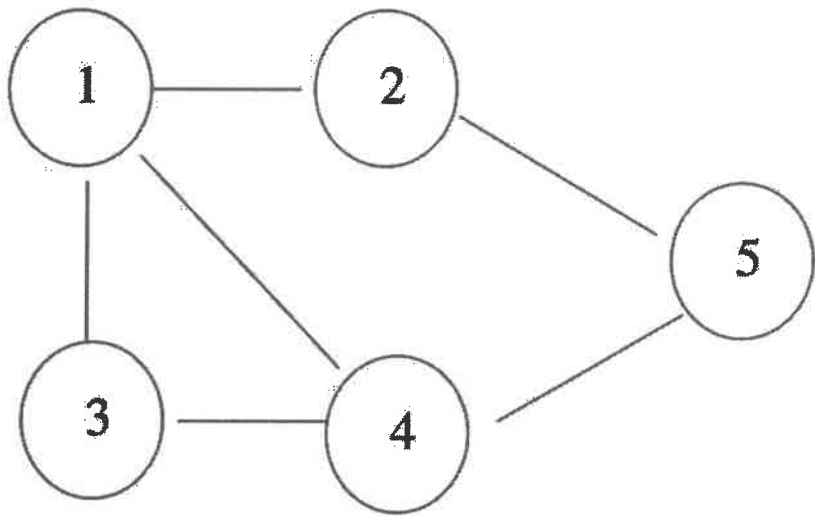
CS1102: DATA STRUCTURES

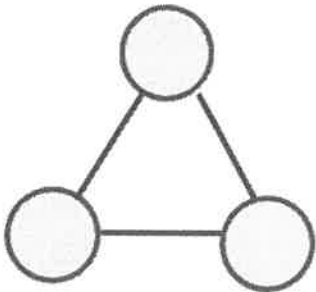
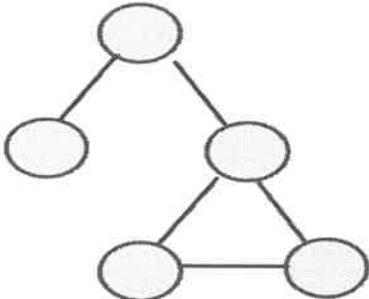
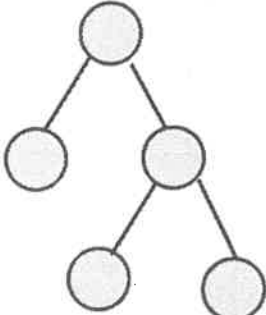
Time: 2.5 hours

Max. Marks: 30

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A	In the following directed graph, write down its DFS Traversal and BFS Traversal, starting with vertex 3. Write down the steps of both traversals.  <pre>graph LR; 1((1)) --> 2((2)); 1((1)) --> 3((3)); 1((1)) --> 4((4)); 2((2)) --> 5((5)); 3((3)) --> 4((4)); 4((4)) --> 5((5));</pre>	05 CO1
Q.1B	Draw Binary Search Tree that results from inserting into an initially empty tree with keys given below - Sequence:- 80, 70, 66, 56, 33, 23, 14, 10, 7 and then delete 33. Show step by step process of tree creation and deletion operation.	05 CO2
Q.2A	Write Pseudo Code/ Algorithm to delete a node at a given position in singly linked list. E.g.: Input: 1→2→3→4→5→ NULL , 3 Output: 1→ 2 →4→ 5→ NULL	04 CO1

Q.2B	From the following given structures, identify which one is a tree or a graph. Justify your answer.  (a)  (b)  (c)	03 CO4
Q.3A	An array contains the elements shown below. The first two elements have been sorted using a selection sort. What would be the value of the elements in the array after three more passes of the selection sort algorithm? 7, 8, 26, 44, 13, 23, 98, 57	03 CO4
Q.3B	A Binary tree has 10 nodes. The in-order and preorder traversals of the tree yields the following sequence of nodes: Preorder: J C B A D E F I G H Inorder: A B C E D F J G I H Draw the Binary tree and find Post order of the tree.	04 CO5
Q.4A	Explain the fundamental differences between the Stack and Queue data structures in terms of structure, operations, and their applications.	03 CO5
Q.4B	Evaluate the following postfix expression using a stack. Show the step-by-step process of stack operations. 8 5 2 * + 9 3 / -	03 CO1